



We create chemistry

**Investor Update 2021**  
**BASF's new Verbund site in Zhanjiang**  
**September 27, 2021**

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Chairman of the Board of Executive Directors

The spoken word applies.

Good morning ladies and gentlemen,

**[Slide 1: Title slide]**

Thank you for joining us today. I hope the video was able to give you a first impression of our new Verbund site.

The foundation of BASF's strategy is long-term profitable and sustainable growth. To achieve this, we focus on organic growth through investments and R&D. Sustainability plays a central role in all our activities, and today's Investor Update will also feature several examples on this overarching theme.

Let's start with a quick look back: In July 2018, we announced the signing of a non-binding Memorandum of Understanding with the southern Chinese province of Guangdong. We wanted to investigate the possibility of building a highly integrated production site in Guangdong. Since then, we have reached several milestones such as the official start of construction in November 2019, the commencement of piling work for the first plants in May 2020 and the signing of a renewable direct power-purchase agreement in March this year.

**[Slide 2: Agenda: Market environment in China – a robust basis for growth]**

My presentation is structured in five chapters. Let us begin with the market environment and the underlying rationale for setting up a seventh BASF Verbund site in Zhanjiang.

**[Slide 3: China is the major growth driver for global chemical production: Two thirds of growth will come from Greater China by 2030]**

We forecast that global chemical production will continue to grow above GDP – at an attractive rate of around 3.3 percent per year between 2020 and 2030. Already today, Greater China accounts for around half of global chemical production. Global growth in chemical production until

2030 will be dominated by Greater China, which will account for more than two thirds of the total growth during this period.

**[Slide 4: The absolute growth of the chemical market in China is expected to be twice as high as in the rest of the world]**

In other words, the absolute growth of the chemical market in Greater China is expected to be twice as high as in the rest of the world. All other regions will grow as well, but the absolute size of the Chinese market is, and will continue to be unmatched.

**[Slide 5: Economic drivers for long-term growth in China remain unchanged despite the impact of the pandemic]**

On a broader scale, the drivers of economic growth remain convincing in China. These include continued urbanization, new technologies and an emphasis on more sustainable paths for long-term growth. China is already an economic powerhouse today, but it aims for a much higher level of GDP per capita, similar to that of more advanced economies.

**[Slide 6: China's 14th five-year plan and policy initiatives add momentum to BASF's strategy implementation in China]**

China's GDP growth is increasingly fueled by domestic consumption and by various policy initiatives aimed at a more balanced growth between rural and urban areas. It is also driven by an emphasis on innovation. BASF is very well positioned to benefit from these trends, thanks to our long track record in the country. Our customer-driven innovations, front-runner position in sustainability and local asset and R&D footprint will fuel BASF's future growth.

**[Slide 7: Today, 90% of BASF's production assets are in East China, in South China the company is still under-represented]**

The macroeconomic environment and policy frameworks clearly favor the ongoing, rapid growth of the chemical industry in China. BASF has participated in this growth for more than a hundred years. We have

directly invested more than 6 billion euros during the past two decades. With this we have built a strong organization that contributes a significant share of profitable growth to the BASF Group.

This slide illustrates that our production assets are strongly focused on East China and relatively under-represented in South China. This gap will be closed before the end of this decade, when our new Verbund site in Zhanjiang is fully operational.

**[Slide 8: Guangdong is home of key customers from fast-growing industries]**

Let us look at some of the factors that make Guangdong province an attractive location for BASF.

With around 126 million residents, Guangdong is the most populous province in China. Also, in terms of GDP, it is the country's largest province, with Jiangsu province ranking second. The GDP growth of around 6 percent per year in Guangdong is driven by industrial investments of important BASF customer industries such as transportation, consumer goods, home and personal care. The province's GDP is closely trailing the GDP of South Korea. This large and growing market is locally undersupplied in terms of its demand for chemicals. We learned that Guangdong imports around 20 million tons of chemicals every year.

In a nutshell: There is a fast-growing local demand for innovative chemical products and solutions.

**[Slide 9: Guangdong province is the economic growth engine of China and a powerhouse of BASF's key customer industries]**

On the left side of this slide, you can see the projected GDP growth of Guangdong and Jiangsu provinces, compared to that of Germany. In 2020, the GDP of each of these provinces was around half the size of

Germany's GDP. By 2050, the GDP of Guangdong and of Jiangsu are each expected to exceed that of Germany. Both provinces are expected to grow by a level that is more than "one current Germany."

On the right side of the slide, there is a comparison between South China and Germany for light vehicle production. Already today, South China produces more vehicles than Germany, and the gap is expected to widen during the next few years.

**[Slide 10: Agenda: BASF performance in Greater China – a proven track record]**

With this exciting view on growth and demand development, let's take a closer look at BASF's performance in Greater China.

**[Slide 11: BASF has substantially increased its presence in Greater China]**

In only the last 10 years, BASF has successfully more than doubled its sales in Greater China, supported by a significantly increased share from products manufactured within China. This growth, as well as our strongly increased R&D presence in Shanghai has also resulted in an expansion of our workforce over this period.

Please keep in mind that the 2 billion euros of sales generated by BASF-YPC Company Limited in 2020 are not included in the 8.5 billion euros, as we are accounting for our participation in the joint venture at equity.

**[Slide 12: BASF's Verbund site in Nanjing is a prime example of our success in China]**

The Verbund site in Nanjing is a prime example of BASF's success in China and the benefits of our longstanding relationships in the country. This joint venture with Sinopec commenced operations in 2005, and has undergone several expansions during the last decade, as we shifted focus towards more diversified value chains. BASF-YPC is often cited,

also by Sinopec, for its excellence in operations and asset effectiveness. It is, in fact, one of the most profitable BASF sites worldwide.

**[Slide 13: BASF's growth and profitability targets require a strong position in Greater China]**

Ladies and gentlemen, let me clearly state this: BASF can only achieve its global targets for growth and profitability with a strong position in Greater China. On this slide, you can see that we are consistently delivering sales volumes and earnings in Greater China that exceed the average numbers for BASF Group. Between 2015 and 2020, sales volumes in Greater China have grown at 9 percent on a compounded average annual basis. Profitability, measured by EBITDA before special items, has grown by 26 percent on average per year. Obviously, the performance is stronger than in any other region.

**[Slide 14: Agenda: Zhanjiang – the location of our new Verbund site in South China]**

Let us have a closer look at Zhanjiang, the location of our new Verbund site in South China.

**[Slide 15: Location in Zhanjiang enables BASF to capture long-term profitable growth in the fastest growing chemical market worldwide]**

Zhanjiang is a prefecture-level city at the southwestern end of Guangdong province, facing Hainan island to the south. It has a deep-water seaport with easy access to shipments of raw materials and finished goods to and from other ports in China, in Asia and other regions. It also offers the shortest sea routes between mainland China and Southeast Asia.

Our Verbund site is located on Donghai island, right next to the Zhanjiang deep water seaport. The government of Guangdong province is committed to providing this area with world-class logistics infrastructure.

It is also being developed as a key hub for the new automotive industry based on battery-driven vehicles.

This location suits BASF well to set the foundation for its new integrated Verbund platform, with the latest and most innovative technologies and production processes. The future product streams will be diversified, including downstream chemicals that are in high demand in Guangdong and neighboring provinces. Furthermore, this Verbund site will be a front-runner in terms of sustainability, with significantly less carbon emissions compared with a conventional set-up. On top, we expect to benefit from government incentives and zoning rules, such as the plan to designate Donghai island as a free trade zone.

**[Slide 16: Agenda: The new Verbund site – highly integrated and sustainable]**

Let's move on to some of the features of the planned Verbund set-up.

**[Slide 17: Targets and framework conditions for the new BASF Verbund site in Zhanjiang]**

These are the main targets and framework conditions for our new Verbund site:

- We have full control, through the 100 percent ownership of the core assets at the Zhanjiang Verbund site.
- We will build a world-scale steam cracker with flexibility for the use of various major feedstocks.
- All the plants are targeted to be competitive and profitable, through scale, as well as the deployment of digitalization and new technologies.
- In addition, the construction of this greenfield site gives us the opportunity to set new standards in sustainability.
- There is also sufficient space for further expansion in the future.

Let me mention another target that is very important for all our projects and operations: safety. We are proud to have completed 2 million hours of safe work on this project, from the commencement of construction work to the end of August 2021.

**[Slide 18: Main construction phases of the new Verbund site – stepwise approach]**

On this slide, we have summarized the planned construction phases.

We have already begun constructing the first downstream plants of the Performance Materials division, in the so-called “initial phase.” These plants will produce engineering plastics and thermoplastic polyurethanes that are in high demand in Guangdong. The first of these plants is expected to start up by mid-2022.

The heart of the Verbund will be the steam cracker. The cracker, and some of the associated downstream plants, will be constructed during phase 1. These are expected to start up as of 2025.

Further product lines will start up as of 2028, during phase 2. These will mostly consist of downstream plants that will be backward integrated into the streams of the steam cracker – achieving Verbund synergies.

**[Slide 19: First downstream plants are expected to be operational by 2022 and 2023]**

On the previous slide, we described the initial phase, for which construction is already at full speed. We began constructing the first plants within less than two years of the project's inception. This is amazing for a project of this scale and complexity.

As already mentioned, products such as Ultramid®, Ultradur® and Elastollan® from our Performance Materials division enjoy a strong demand in South China, particularly from the automotive industry.

The materials are also used by several other consumer goods industries such as footwear, apparel and packaging.

**[Slide 20: BASF's new Verbund site will offer a broader and more diversified downstream product portfolio than competition]**

South China is already home to several integrated refineries and petrochemical plants. In Guangdong province itself, there are around ten such production facilities. Compared to most of these facilities, BASF's new Verbund site will offer a more diversified range of products.

As you can see from the list of products, much of the current production in South China is limited to C2 and C3 mass derivatives such as polyethylene, ethylene oxide and polypropylene. In contrast, our portfolio will include several products that are not currently being produced in the area – with a further extension to products of the C2, C3 and C4 value chains.

**[Slide 21: World-scale Verbund site with diversified value chains]**

This is the planned set-up in phase 1 and 2 of our Verbund site project in Zhanjiang. This slide depicts major product streams and does not include further products such as engineering plastics, which belong to the initial phase. We will build and operate a world-scale steam cracker with an annual capacity of around 1 million metric tons of ethylene. The cracker will be capable of processing both naphtha and butane feedstocks with a high degree of flexibility between the two. This will ensure the most economic production.

Let me share some further details with regard to each value chain.

Ethylene will be fully consumed within the Verbund to produce ethylene oxide and ethylene glycol; the remainder will be used for high density polyethylene production. EO is an important raw material to produce surfactants and amines.

Propylene provides the feedstock for acrylics and oxo-alcohols. These will be used to make further products in the C3 value chain, with reliable and high quality, as demanded in the market. Crude C4 will be used for iso-butene extraction to support the citral value chain.

The new Verbund site is being built in accordance with BASF's high global EHS standards, as well as applicable local laws and regulations. We are also implementing a comprehensive smart manufacturing concept, based on cutting-edge technologies.

**[Slide 22: BASF's Zhanjiang Verbund site will have the lowest projected CO<sub>2</sub> emissions in the world]**

Ladies and gentlemen,

You are aware of BASF's ambitious goals to reduce the carbon footprint of our operations globally. We are committed to a 25 percent reduction of carbon emissions by 2030, using 2018 as the base year. At the same time, we are already working on new technologies and concepts to achieve our target of net-zero carbon emissions by 2050. Not all the technologies to achieve the 2050 goals are available yet for deployment at our new Verbund site. Nevertheless, we have incorporated several innovative available process concepts in our planning, that will contribute to our targets. By 2030, when the Zhanjiang Verbund site is fully operational, we project that the CO<sub>2</sub> emissions will be around 60 percent lower than that of a gas-based petrochemical facility of similar scope. On the next slide, you will find a few of the process innovations contributing to the reduction of carbon emissions.

**[Slide 23: Our unique process concepts will significantly reduce carbon emissions compared to state-of-the-art technologies]**

These are the five major levers to ensure significantly lower CO<sub>2</sub> emissions by 2030, when the site is fully operational. The measures are

evaluated based on CO<sub>2</sub> avoidance costs and how they compare with each other.

Renewable energy will play a key role in lowering the emissions at the new Verbund site. We have already secured 100 percent renewable power for the plants of the initial phase. I will come back to this lever on the next slide.

The second major lever is the replacement of steam with electricity. A good example is driving the turbines for the compressors in the cracker with electricity instead of steam, as is typically done. With this measure, we will avoid on-purpose generation of steam from boilers run by fossil energy. Instead, we will use electric drives, or eDrives. This will contribute to lower CO<sub>2</sub> emissions not only by avoiding the use of fossil fuels, but also by leveraging the Verbund advantage to ensure an equilibrium of the steam balance at the site.

We will also deploy new technologies such as the syngas production concept. CO<sub>2</sub> off-gas that is a by-product of the ethylene oxide process and excess hydrogen from cracker operations will be used to manufacture syngas. Furthermore, excess steam will be used to preheat air in the cracker furnaces, contributing to the efficiency of the overall system.

Other advantages of the Verbund that we will leverage include the use of fuel gas released by the new air preheating process as a secondary feedstock to produce syngas. We will also use excess gas streams as raw materials for further steps in the production process.

**[Slide 24: CO<sub>2</sub> reduction via renewable direct power-purchase mechanism – an unprecedented step in Guangdong province]**

Let me come back to the topic of renewable power in Zhanjiang. BASF is the first company to be able to purchase renewable energy under the new

pilot trading rules in Guangdong. Until last year, there was no such policy in the province that enabled the direct purchase of renewable energy from the grid. BASF was instrumental in triggering a policy change for renewable direct power purchase, with strong support from the Guangdong authorities. We have secured 100 percent renewable power for the plants that will come on stream in the initial phase. We target to source 100 percent of the total power requirements, which will be more than 400 megawatts when the site is fully operational by 2030, from renewable sources.

**[Slide 25: Agenda: Financials and key takeaways]**

Finally, let us look at key financial projections for the project, before I summarize the presentation.

**[Slide 26: Key financials of BASF's new Verbund site in Zhanjiang]**

By 2030, we expect to generate sales with the new Verbund site operations between 4 and 5 billion euros and an EBITDA between 1 and 1.2 billion euros. By 2030, we forecast total capital expenditures to be between 8 and 10 billion euros. Peak capital expenditures are planned between 2023 and 2025. In the subsequent years, capital expenditures will go down significantly.

As usual for a greenfield project, the share of infrastructure investments is much higher compared to a brownfield project. Building a Verbund site requires full infrastructure – from sewerage to pipe-rack systems, roads, utilities and logistical facilities such as jetties and tank farms. With further expansions at the site these investments will be diluted and fully utilized. We experienced this also at our Verbund site in Nanjing where several expansions took place.

The new Verbund site in Zhanjiang will be BASF's key platform for long-term profitable and sustainable growth in China – also beyond phase 1

and phase 2 – supporting BASF Group's growth and profitability in the future.

**[Slide 27: BASF Group: High capex discipline in ongoing business to support investments in growth projects]**

This slide outlines the capital expenditures that will be required across BASF Group in the five-year period from 2021 to 2025. It provides an indication of the relative capex share for ongoing business activities and for our major growth projects, namely the new Verbund site in Zhanjiang and our battery materials business.

We will ensure a high level of discipline regarding the capex required to maintain and grow our existing businesses. It will be limited to an average of around 2.6 billion euros per year. This will enable us to fund the growth projects with an average of roughly 2 billion euros per year.

At the end of February 2022, we will provide the new five-year capex plan from 2022 to 2026.

**[Slide 28: BASF's new Verbund site in Zhanjiang: Key takeaways]**

Ladies and gentlemen, let me summarize.

The macroeconomic environment in China is robust in the long term and expected to continue to be in growth mode in future.

Guangdong province is a major economic growth engine, and is currently lacking in availability of chemicals required to ensure the continued growth of several important industries.

BASF is very well positioned to capture future growth in China. Our know-how of the operating environment, our unique Verbund concept as well as the longstanding relationships we have built over the years, are all assets in the world's largest chemical market. We have a proven track record of strong top-line and earnings growth in China.

Ultimately, the new Verbund site in Zhanjiang will be a key platform for long-term profitable and sustainable growth, not only in Greater China, but for BASF Group as a whole.